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CLAIMS

1. A method for organizing a sequence of video frames, comprising:

selecting one of the frames in the sequence as an initial frame in a first portion of a segment of the sequence;

adding further frames in the sequence, subsequent the initial frame, to the first portion, while a measure of similarity of each of the added frames to the frames already in the first portion is within a first predefined bound;

selecting one of the added frames in the first portion to be a representative frame for the segment; and

generating a second portion of the segment by adding still further frames in the sequence, subsequent to the last frame in the first portion, to the second portion, while the measure of similarity of the added frame to the representative frame is within a second predefined bound; and

determining the first and second portions together to constitute the segment that is represented by the representative frame.

2. A method according to claim 1, wherein selecting the frame as the initial frame comprises selecting the first frame subsequent to a final frame in a preceding segment.

3. A method according to claim 1, wherein adding the further frames comprises, for each of the added frames, computing at least one parameter indicative of a characteristic of the added frame, and wherein the measure of similarity comprises a distance measured

6   between the parameters of the added frame and the frames
7   already in the first portion.

1   4.   A method according to claim 3, wherein computing the
2   at least one parameter comprises computing a vector of
3   parameters, and wherein the distance comprises a vector
4   distance.

1   5.   A method according to claim 3, wherein adding the
2   further frames comprises finding a bounding subset of the
3   frames in the first portion, and adding the further
4   frames to the first portion while the distance between
5   each of the added frames and the frames in the
6   representative set is within the predefined bound.

1   6.   A method according to claim 5, wherein finding the
2   bounding subset comprises selecting the subset so as to
3   maximize a sum of the distances between all of the frames
4   in the subset.

1   7.   A method according to claim 6, wherein selecting the
2   subset comprises determining the sum of the distances
3   between one of the further frames added to the sequence
4   and the frames in the bounding subset, and replacing one
5   of the frames in the subset with the one of the further
6   frames if replacing the one of the frames in the subset
7   will increase the sum of the distances between all of the
8   frames in the subset.

1   8.   A method according to claim 1, wherein selecting the
2   representative frame comprises selecting a final one of
3   the frames added to the first portion to be the
4   representative frame.

1   9.   A method according to claim 8, wherein the frame in
2   the sequence following the representative frame is

3   outside the first predefined bound of the frames in the
4   first portion.

1   10. A method according to claim 1, and comprising
2   storing the sequence in an archive, and indexing the
3   archive using the representative frame.

1   11. A method according to claim 1, and comprising
2   compressing the sequence using the representative frame.

1   12. Apparatus for organizing a sequence of video frames,
2   comprising a video processor, which is arranged to select
3   one of the frames in the sequence as an initial frame in
4   a first portion of a segment of the sequence and to add
5   further frames in the sequence, subsequent the initial
6   frame, to the first portion, while a measure of
7   similarity of each of the added frames to the frames
8   already in the first portion is within a first predefined
9   bound, and to select one of the added frames in the first
10 portion to be a representative frame for the segment, and
11 further arranged to generate a second portion of the
12 segment by adding still further frames in the sequence,
13 subsequent to the last frame in the first portion, to the
14 second portion, while the measure of similarity of the
15 added frame to the representative frame is within a
16 second predefined bound, so as to determine the first and
17 second portions together to constitute the segment that
18 is represented by the representative frame.

1   13. Apparatus according to claim 12, wherein the initial
2   frame comprises the first frame subsequent to a final
3   frame in a preceding segment of the sequence.

1   14. Apparatus according to claim 12, wherein the
2   processor is arranged to compute at least one parameter

3 indicative of a characteristic of each of the added
4 frame, and wherein the measure of similarity comprises a
5 distance measured between the parameters of the added
6 frame and the frames already in the first portion.

1 15. Apparatus according to claim 14, wherein the at
2 least one parameter comprises a vector of parameters, and
3 wherein the distance comprises a vector distance.

1 16. Apparatus according to claim 14, wherein the
2 processor is arranged to find a bounding subset of the
3 frames in the first portion, and to add the further
4 frames to the first portion while the distance between
5 each of the added frames and the frames in the
6 representative set is within the predefined bound.

1 17. Apparatus according to claim 16, wherein the
2 bounding subset comprises a subset selected so as to
3 maximize a sum of the distances between all of the frames
4 in the subset.

1 18. Apparatus according to claim 17, wherein the
2 processor is arranged to determine the sum of the
3 distances between one of the further frames added to the
4 sequence and the frames in the bounding subset, and to
5 replace one of the frames in the subset with the one of
6 the further frames if replacing the one of the frames in
7 the subset will increase the sum of the distances between
8 all of the frames in the subset.

1 19. Apparatus according to claim 12, wherein the
2 representative frame comprises the final one of the
3 frames added to the first portion of the segment.

1 20. Apparatus according to claim 19, wherein the frame
2 in the sequence following the representative frame is

3 outside the first predefined bound of the frames in the
4 first portion.

1 21. Apparatus according to claim 12, and comprising a
2 storage device, wherein the processor is arranged to
3 store the sequence in the storage device, and to create
4 an index to the sequence using the representative frame.

1 22. Apparatus according to claim 12, wherein the
2 processor is arranged to compress the sequence using the
3 representative frame.

1 23. A computer software product for organizing a
2 sequence of video frames, comprising a computer-readable
3 medium in which program instructions are stored, which
4 instructions, when read by a computer, cause the computer
5 to select one of the frames in the sequence as an initial
6 frame in a first portion of a segment of the sequence, to
7 add further frames in the sequence, subsequent the
8 initial frame, to the first portion, while a measure of
9 similarity of each of the added frames to the frames
10 already in the first portion is within a first predefined
11 bound, to select one of the added frames in the first
12 portion to be a representative frame for the segment, to
13 generate a second portion of the segment by adding still
14 further frames in the sequence, subsequent to the last
15 frame in the first portion, to the second portion, while
16 the measure of similarity of the added frame to the
17 representative frame is within a second predefined bound;
18 and to determine the first and second portions together
19 to constitute the segment that is represented by the
20 representative frame.